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|---|-------------|-----------------------------|---------------------|------------------|
| 10/594,767  | 01/18/2007  | Raimund Mellies             | 296755US0PCT        | 4634             |
| 22850 7590 02/18/2010<br>OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.<br>1940 DUKE STREET<br>ALEXANDRIA, VA 22314 |             |                             |                     |                  |
| EXAMINER<br>WEBB, GREGORY E   |             |                             |                     |                  |
| ART UNIT<br>1796  |             | PAPER NUMBER                |                     |                  |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/594,767

**Applicant(s)**

MELLIES, RAIMUND

**Examiner**

Gregory E. Webb

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/22)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to the restriction have been considered. The examiner agrees that as this case follows PCT practices a restriction is not supported as lack of unity was not met. As such previous restrictions are withdrawn.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 9, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The applicant has used registered trademarks to describe their invention. It is first unclear to the examiner what these compounds are. Secondly trademarks to compounds may change over time. So what is a "Tween" today could possibly be a completely different compound or contain additional ingredients in a year. Because the compounds or compositions could change over time, these claims are considered indefinite. It is suggested the applicant use a chemical nomenclature to define compounds within the composition.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurata, Yasushi et al. US 20050181609 A1.

Concerning the oxidant, and claimed intended use, Kurata, Yasushi teaches the following:

[0047] Examples of the **oxidant** (i) in the present invention include metal **oxidants** such as **hydrogen peroxide**, ammonium persulfate ferric nitrate, nitric acid, potassium periodate, hypochlorous acid and ozone water. Among these compounds, **hydrogen peroxide** is especially preferable. These compounds may be either singly or by mixing two or more. In the case where the base body having a surface to be polished which is a subject to be treated with the polishing slurry is a silicon substrate including integrated circuit elements, an **oxidant** containing no nonvolatile component is preferably used because contamination with alkali metals, alkali earth metals, halides and the like is undesirable. However, ozone water is changed violently in composition with time and therefore **hydrogen peroxide** is most preferable. When the base body is, for example, a glass substrate containing no **semiconductor** element, an **oxidant** containing nonvolatile component may be used without any problem.

Concerning the aprotic polar solvent, Kurata, Yasushi teaches the following:

[0091] Also, the polishing slurry of the present invention may be compounded of an organic solvent. The organic solvent is preferably mixed with water in an optional ratio. Examples of the organic solvent include methanol, ethanol, 2-propanol, tetrahydrofuran, **ethylene glycol**, acetone and methyl ethyl ketone.

Concerning the surfactant, Kurata, Yasushi teaches the following:

[0090] The polishing slurry of the present invention may be compounded of abrasive such as alumina, silica and ceria, **surfactants** and colorants including dyes such as Victoria Pure Blue and pigments such as Phthalocyanine Green.

Concerning the claimed organic acid, Kurata, Yasushi teaches the following:

3. A polishing slurry according to claim 1, wherein the A-group consists of **malonic acid, citric acid, malic acid, glycolic acid**, glutamic acid, gluconic acid, oxalic acid, **tartaric acid**, picolinic acid, nicotinic acid, mandelic acid, acetic acid, sulfuric acid, nitric acid, phosphoric acid, hydrochloric acid and formic acid and the B-group consists of **succinic acid**, adipic acid, **glutaric acid**, benzoic acid, quinaldinic acid, butyric acid, valeric acid, **lactic acid**, phthalic acid, fumaric acid, **maleic acid** and aminoacetic acid.

7. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato; Takashi et al. US 20060042502 A1.

Concerning the claimed organic acid, Sato, Takashi teaches the following:

10. The metal polishing composition according to claim 9, wherein the organic acid is at least one compound selected from a group consisting of acetic acid, **lactic acid, malic acid, citric acid, tartaric acid, glycolic acid**, oxalic acid, and phthalic acid.

Concerning the oxidant, Sato, Takashi teaches the following:

8. The metal polishing composition according to claim 3, wherein the oxidizing agent is at least one compound selected from a group consisting of oxygen, ozone, **hydrogen peroxide**, and ammonium persulfate.

Concerning the surfactant, Sato, Takashi teaches the following:

[0058] The **surfactants** may be cationic, anionic or non-ionic. Examples of suitable cationic **surfactants** include aliphatic amine salts and aliphatic ammonium salts. Examples of suitable anionic **surfactants** include fatty acid soaps; carboxylates such as alkyl ether carboxylates; sulfonates such as alkylbenzene sulfonates and alkylnaphthalene sulfonates; sulfate esters such as high alcohol sulfates, and alkyl ether sulfates; and phosphate esters such as alkyl phosphates. Examples of suitable non-ionic **surfactants** include ethers such as polyoxyethylene alkyl ethers, ether esters such as polyoxyethylene ethers of glycerin esters, and esters such as polyethylene glycol fatty acid esters, glycerin esters, and sorbitan esters.

Concerning the imidazoline compounds, Sato, Takashi teaches the following:

[0051] Of the possible complex forming compounds, azole compounds are preferred as

they provide superior metal protective film formability and excellent anticorrosive properties. Specific examples of suitable azoles include **benzimidazole**-2-thiol, 2-[2-(benzothiazolyl)]thiopropionic acid, 2-[2-(benzothiazolyl)]thiobutyric acid, 2-mercaptobenzothiazole, 1,2,3-triazole, 1,2,4-triazole, 3-amino-1H-1,2,4-triazole, benzotriazole, 1-hydroxybenzotriazole, 1-dihydroxypropylbenzotriazole, 2,3-dicarboxypropylbenzotriazole, 4-hydroxybenzotriazole, 4-carboxyl-1H-benzotriazole, 4-methoxycarbonyl-1H-benzotriazole, 4-butoxycarbonyl-1H-benzotriazole, 4-octyloxycarbonyl-1H-benzotriazole, 5-hexylbenzotriazole, N-(1,2,3-benzotriazolyl-1-methyl)-N-(1,2,4-triazolyl-1-methyl)-2-ethylhex-ylamine, tolyltriazole, naphthotriazole, bis[(1-benzotriazolyl)methyl]phosphonic acid, **benzimidazole**, tetrazole, and the salts thereof. Of these compounds, benzotriazole is preferred.

8. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Mizuta; Hironori et al. US 20070235061 A1.

Concerning the claimed organic acid, Mizuta, Hironori teaches the following:

13. The cleaning agent according to claim 11, wherein the dicarboxylic acid is one selected from the group consisting of an oxalic acid, a **malonic acid**, a **succinic acid**, a **glutaric acid**, an adipic acid, a pimelic acid, a **maleic acid**, a fumaric acid and a phthalic acid.



Concerning the surfactant, and imidazoline compounds, Mizuta, Hironori teaches the following:

[0068] The **surfactant** includes, for example, nonionic **surfactants** having a polyoxyalkylene group in a molecule; anionic **surfactants** having a group selected from sulfonic acid group, carboxyl group, phosphonic acid group, sulfoxyl group and phosphonoxyl group in a molecule; amphoteric **surfactants** such as alkylbetaine derivatives, imidazoliniumbetaine derivatives, sulfobetaine derivatives, aminocarboxylic acid derivatives, **imidazoline** derivatives and amine oxide derivatives.

Concerning the aprotic polar solvent, Mizuta, Hironori teaches the following:

[0022] Glycol ethers include, for example, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol mono n-propyl ether, ethylene glycol mono n-butyl ether, ethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monobutylether, diethylene glycol monohexyl ether, diethylene glycol dimethyl ether, diethylene glycol diethyl ether, triethylene glycol monomethyl ether, triethylene glycol monoethyl ether, 1-methoxy-2-propanol, 1-ethoxy-2-propanol, propylene glycol monoethyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl

Art Unit: 1796

ether, tripropylene glycol monomethyl ether, polyethylene glycol monomethyl ether and 3-methoxy-3-methyl-1-butanol.

9. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuchiya, et al. 6,530,968.

Concerning the surfactant, Tsuchiya, Yasuaki teaches the following:

Examples of an anionic **surfactant** which may be used include soluble salts such as sulfonates, sulfates, carboxylates, phosphates and phosphonates, which may be an alkali metal, alkaline-earth metal, ammonium or amine salts, preferably an ammonium salt; for example, alkylsulfates such as alkylbenzenesulfonates and dodecylsulfates; aliphatic acid salts such as stearates; polycarboxylates; alkylphosphates and hexametaphosphates.

Concerning the claimed organic acid, Tsuchiya, Yasuaki teaches the following:

Examples of a carboxylic acid include oxalic acid, **malonic acid**, **tartaric acid**, **malic acid**, **glutaric acid**, **citric acid**, **maleic acid**, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, acrylic acid, **lactic acid**, **succinic acid**, nicotinic acid and their

salts.

Concerning the imidazoline compounds, Tsuchiya, Yasuaki teaches the following:

Examples of an antioxidant include benzotriazole, 1,2,4-triazole, benzofuroxane, 2,1,3-benzothiazole, o-phenylenediamine, m-phenylenediamine, catechol, o-aminophenol, 2-mercaptobenzothiazole, **2-mercaptobenzimidazole**, 2-mercaptobenzoxazole, melamine and their derivatives. Among these, benzotriazole and its derivatives are preferable. Examples of a benzotriazole derivative include substituted benzotriazoles having a benzene ring substituted with hydroxy; alkoxy such as methoxy and ethoxy; amino; nitro; alkyl such as methyl, ethyl and butyl; halogen such as fluorine, chlorine, bromine and iodine. Examples of a 1,2,4-triazole derivative include a substituted 1,2,4-triazole having any of the substituents as described above in its 5-membered ring.

Concerning the oxidant, Tsuchiya, Yasuaki teaches the following:

9. The chemical mechanical polishing slurry of claim 8 in which the oxidizing agent is **hydrogen peroxide** and is present in an amount of 0.05 to 10 wt. %, the organic acid is 0.05 to 3 wt. %, the anti-**oxidant** is 0.001 to 2.5 wt. % and the pH of the slurry is 4 to 8.

***Conclusion***

The remainder of the reference have been cited to demonstrate the state of the art in compositions containing organic acids.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory E. Webb/  
Primary Examiner, Art Unit 1796

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gew

